

US EPA ARCHIVE DOCUMENT

file

code

Shaughnessy No.: 122804

Date Out of EAB: MAR 18 1986

To: G. LaRocca  
Product Manager 15  
Registration Division (TS-767)

From: Samuel M. Creeger, Chief  
Review Section #1  
Exposure Assessment Branch  
Hazard Evaluation Division (TS-769)



Attached, please find the EAB review of...

Reg./File # : 618-OA  
Chemical Name: Avermectin  
Type Product : Insecticide  
Product Name : AVID  
Company Name : Merck  
Purpose : New application for use in flower crops and foliage plants  
for control of leafminers.

Date Received: 9/24/85 Action Code(s): 115  
Date Completed: MAR 18 1986 EAB #(s) : 5946  
days: 2

Deferrals to: \_\_\_\_\_ Ecological Effects Branch  
\_\_\_\_\_ Residue Chemistry Branch  
\_\_\_\_\_ Toxicology Branch

Monitoring study requested by EAB: ☐

Monitoring study voluntarily conducted by registrant: ☐

1.a CHEMICAL:

Avermectin B<sub>1a</sub>  
Abamectin.  
AVID™

The structure is posted on page 2 of this report.

The active ingredient is composed of not less than 80% avermectin B<sub>1a</sub> and not more than 20% avermectin B<sub>1b</sub>.

1.b Physical Properties:

See earlier reports.

2. TEST MATERIAL:

Non-radiolabeled Avermectin B<sub>1a</sub> was used in AVID™ formulation.

3. STUDY/ACTION TYPE:

Additional data (field dissipation in flower crops) in support of Avermectin B<sub>1a</sub> for use in a new formulation on ornamental plants.

4. STUDY IDENTIFICATION:

Abamectin Soil Dissipation in Flower Crops.

5. REVIEWED BY:

Akiva D. Abramovitch, Ph.D.  
Chemist  
Environmental Chemistry Review Section 1/EAB/HED/OPP

*Abramovitch*  
Date: 3/18/85

6. APPROVED BY:

Samuel M. Creeger, Chief  
Supervisory Chemist  
Environmental Chemistry Review Section 1/EAB/HED/OPP

*Sam M Creeger*  
MAR 18 1986  
Date: / /86

7. CONCLUSIONS:

The field dissipation study satisfied the EAB data requirement pending the submission of the soil characteristics and half life calculations. The study indicated that Avermectin B<sub>1a</sub> when applied in AVID™ formulation to flower crop will dissipate with a half life of less than one month and will not leach readily into the soil. The reviewer also noted that these results were in agreement with an earlier submission (EAB review of Sept. 05, 1985) concerning the field dissipation of Avermectin B<sub>1a</sub> in AFFIRM™ pellets.

8. RECOMMENDATIONS:

Acceptance of the field dissipation study would fulfill the EAB data requirement for registration. To be accepted, the registrant must provide the characteristics of the soil used in the study and half life calculations.

9. BACKGROUND:

- A. Introduction: Merck submitted additional data to support registration of Avermectin B<sub>1a</sub> for use in a new formulation in AVID™ on ornamental plants for control of leafminers and two spotted spider mites on flower crops and foliage plants. Merck submitted previous data in support of registration of avermectin in AFFIRM™ for fire ant control.
- B. Directions for Use: AVID™ is an emulsifiable concentrate containing 0.15 lb of Avermectin per gallon which is then diluted with water and applied as a foliar spray. The application calls for 8-16 oz of the ~~active ingredient~~ per acre per crop (please see attached label). *↑ product*

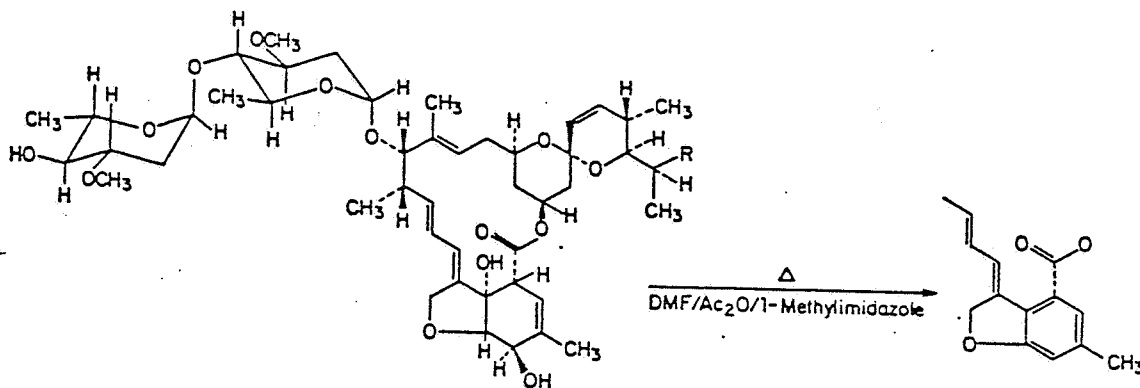
10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES:

10.1 A. Study Identification: Abamectin Soil Dissipation in Flower Crops.

The study was conducted by Merck Sharp & Dohme Research Laboratories in Three Bridges, NJ (Report No. 001-84-008R).

B. Materials and Methods:

Avid™ Formulation containing 0.15 lb of Avermectin per gallon was applied by a tractor mounted hydraulic boom sprayer to three replicate 3.5 ft x 20 ft plots of a fallow field of fine sand amended with German peat and located in Alva, Florida. The application rates were 0.02 lb a.i./200 gallons/acre and 0.04 lb a.i./200 gal/acre in twelve weekly applications during April, May and June, 1984. To simulate normal irrigation practices in Florida, water was applied to plots by both overhead and drip irrigation to supplement rainfall. Soil samples from the center of each plot were taken before the last day of application and 2 hours, 1, 3, 7, 14, 28, 60 and 90 days after the last application 0-2 and 2-4" up to 28 days and at 4-6", 60 and 90 days after the last application. Percent recoveries of Avermectin B<sub>1a</sub> from soil fortified at 1, 10, 20, 25, 100, 200, 500 and 1500 ng/g averaged 75% (60-102%) and appeared to have a good sensitivity at the low fortification range. The method of analysis was based on the HPLC-Fluorescence determination of a derivative of Avermectin B<sub>1a</sub> as shown in the following reaction scheme:



R=C<sub>2</sub>H<sub>5</sub> for B<sub>1a</sub>  
R=CH<sub>3</sub> for B<sub>1b</sub>

The Fluorescing  
Derivative for HPLC

C. Reported Results:

Initial avermectin Bla residues in the 0-2 soil depth averaged 554 ng/g and 1322 ng/g for the 0.02 and 0.04 lb/a.i./200 gal/acre application rate, respectively. Averaged residues at 7 days at the 0-2" soil were 149 and 491 ng/g for the 0.02 and 0.04 lb a.i./acre, respectively and similar avermectin Bla concentrations were found prior to the last application. A rapid loss of avermectin Bla was observed in the 0-2" soil depth following application. Only detectable amounts of 1.2 ng/g were found in the 4-6" soil 60 days following the last x2 application

D. Study Author's Conclusions:

The author concluded that avermectin Bla residues in the 2-4" for both the x1 and x2 application rate indicated that only a small portion of the loss in the 0-2" portion could be attributed to movement to the 2-4" depth or lower. The slight increase in residues in the 2-4" soil depth might be due to the relatively high rainfall during that period. The author also stated that the study represents a worst case situation for both initial soil residues and residue movement down the soil column, due to absence of plant foliage. The similar avermectin Bla residues after 7 days and prior to the last application was attributed by the author to a substantial residue carry over as result of repeated weakly application.

E. Reviewer's Discussions and Interpretation of Study Results:

The study could not be validated in absence of information with regard to the characteristics of the soil in which the study was conducted. The data indicated that avermectin dissipated quite readily in the Alva soil but the dissipation half life was not calculated (appeared to be about three days). The reviewer did not find a reason to disagree with the study author's conclusions that the study does not support any significant leaching below 4". These conclusions are also in agreement with earlier conclusions drawn by the soil degradation and the leaching studies (see EAB review of March 28, 1984). The study will satisfy the field dissipation data requirement for the proposed registration upon submission of the soil characteristics and half life calculations.

11. COMPLETION OF ONE LINER:

Not completed.

12. CBI APENDIX:

None

Avermectin science review

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The material not included contains the following type of information:

- ☐ Identity of product inert ingredients
  - ☐ Identity of product impurities
  - ☐ Description of the product manufacturing process
  - ☐ Description of product quality control procedures
  - ☐ Identity of the source of product ingredients
  - ☐ Sales or other commercial/financial information
  - ☐ A draft product label
  - ☐ The product confidential statement of formula
  - ☐ Information about a pending registration action
  - ☒ FIFRA registration data
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Pages 20 through 23 are not included in this copy.

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